

### **Amendments to the Claims**

This listing of the claims will replace all prior versions, and listings, of claims in the application:

#### **List of Claims**

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)
15. (Cancelled)

16. (currently amended) A wafer carrier assembly for use in a chemical mechanical polishing system, comprising:
- wafer carrier support frame;
  - wafer carrier head housing rotatably mounted on said wafer carrier support frame;
  - wafer carrier head base;
  - compartmentalized flexible membrane coupled to the wafer carrier base and defining a plurality of concentric chambers;
  - a retaining ring, operatively connected to a retaining ring bearing which allows relative axial motion while constraining relative radial motion between said retaining ring and said wafer carrier head housing;
  - a retaining ring bellows operatively connected to said retaining ring bearing to urge said retaining ring against a polishing member; and
  - a bladder bellows operably connecting said wafer carrier head base to said wafer carrier head housing such that rotational torque is transferred from said wafer carrier head housing to said wafer carrier head base;
- wherein a chamber formed by said bladder bellows, said wafer carrier head base, and said wafer carrier head housing may be pressurized to load said wafer carrier head base and compartmentalized flexible membrane against the polishing member, independent of any frictional loads on said retaining ring, wherein the compartmentalized flexible membrane has a lower surface providing a wafer receiving surface with a plurality of inner portions associated with respective ones of said plurality of concentric chambers such that pressures within each of said chambers are independently controllable; and
- wherein a plurality of concentric rigid supports are coupled to said wafer carrier head base, and wherein the compartmentalized flexible membrane has a plurality of concentric flanges coupled to said plurality of concentric rigid supports to define a first plurality of concentric chambers.

17. (currently amended) The wafer carrier assembly of claim 16 further comprising:  
a flexible member between the plurality of concentric rigid supports and the wafer carrier head base to define ~~the~~ a second plurality of concentric chambers in said flexible member.
18. (currently amended) The wafer carrier assembly of claim 17 further comprising means for independently controlling pressures within said second plurality of concentric chambers defined by said wafer carrier base and said ~~second~~ flexible member.
19. (currently amended) A wafer carrier assembly for use in a chemical mechanical polishing system, comprising:  
wafer carrier support frame;  
wafer carrier head housing rotatably mounted on said wafer carrier support frame;  
wafer carrier head base;  
compartmentalized flexible membrane coupled to the wafer carrier head base and defining a plurality of concentric chambers;  
a retaining ring, operatively connected to a retaining ring bearing which allows relative axial motion while constraining relative radial motion between said retaining ring and said wafer carrier head housing;  
a retaining ring bellows operatively connected to said retaining ring bearing to urge said retaining ring against a polishing member; and  
a bladder bellows operably connecting said wafer carrier head base to said wafer carrier head housing such that rotational torque is transferred from said wafer carrier head housing to said wafer carrier head base;  
wherein a chamber formed by said bladder bellows, said wafer carrier head base, and said wafer carrier head housing may be pressurized to load said wafer carrier head base and compartmentalized flexible membrane against the

polishing member, independent of any frictional loads on said retaining ring, wherein the compartmentalized flexible membrane has a lower surface providing a wafer receiving surface with a plurality of inner portions associated with respective ones of said plurality of concentric chambers such that pressures within each of said chambers are independently controllable; and

wherein a plurality of concentric tubular rings that compartmentalize the flexible membrane into said plurality of inner portions associated with said plurality of concentric chambers.

20. (previously amended) The wafer carrier assembly of claim 19 wherein each of said plurality of concentric tubular rings is provided with at least a pair of restrictors so that one of said plurality concentric chambers is in fluid communication with a neighboring concentric chamber.
21. (previously presented) The wafer carrier assembly of claim 19, wherein said restrictors are inter-chamber restrictors.
22. (currently amended) The wafer carrier assembly of claim 21, wherein said inter-chamber restrictors ~~are~~ include tubings.
23. (currently amended) The wafer carrier assembly of claim 21, wherein said concentric chambers are connected to respective pressure regulators through respective passage ways, and said inter-chamber restrictors provide flow resistance higher than the passageway into said concentric chambers from the pressure regulators.
24. (currently amended) The wafer carrier assembly of claim 21, wherein each said inter-chamber restrictors provides equal flow restriction.
25. (previously presented) The wafer carrier assembly of claim 19, wherein pressure in each of said concentric chamber is maintained through an active control system.

26. (currently amended) The wafer carrier assembly of claim 20, wherein said restrictors allows pressure within each tubular ring to be an average of two adjacent ~~said~~ concentric chambers.
27. (previously presented) The wafer carrier assembly of claim 17, wherein said wafer carrier head base is a bias plate.
28. (cancelled)
29. (cancelled)
30. (cancelled)
31. (cancelled)
32. (cancelled)
33. (cancelled)
34. (cancelled)
35. (cancelled)
36. (cancelled)
37. (cancelled)
38. (cancelled)
39. (cancelled)
40. (new) The wafer carrier assembly of claim 17 wherein the wafer carrier head base is a bias plate having concentric channels, and wherein the flexible member is mounted to the underside of the bias plate such that the concentric channels form the second plurality of concentric chambers.

41. (new) The wafer carrier head of claim 40, wherein the second plurality of concentric chambers in the bias plate control the pressure exerted on the rigid supports.
42. (new) The wafer carrier head of claim 40, wherein pressure in the second plurality of concentric chambers in the bias plate are adjustable to maintain a smooth transition between adjacent compartments of the flexible membrane.
43. (new) The wafer head of claim 16, wherein pressure in the first plurality of concentric chambers are independently adjustable.